FORCEnet
engineering conference

November 15 -17, 2005: Town & Country Convention Center - San Diego, CA

Joint Standards for the Tactical Edge

Mark Evans

Deputy Enterprise IT,

SPAWAR 053

16Nov05

Sponsored by
SPAWARSYSCOM
FORCEnet Chief Engineer

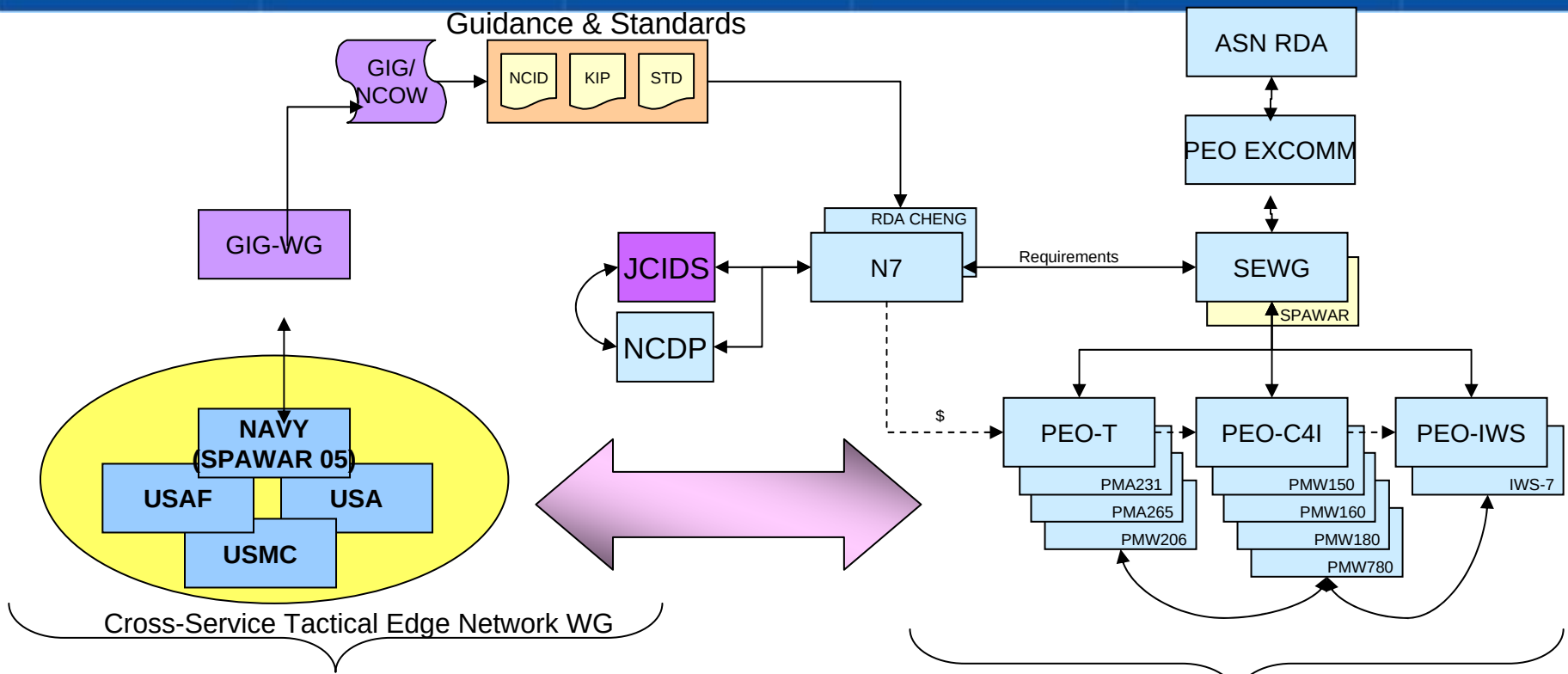
Overview

- Assistant Secretary of Defense for Networks and Information Integration (ASD NII) chartered the Global Information Grid End-to-End Systems Engineering Oversight Activity (GIG E2E SE)
  - Transform GIG from a set of mission specific, vertically integrated capabilities to a net-centric enterprise information environment
  - GIG E2E SE is developing Net-Centric Implementation Documents (NCIDs)
    - Joint standards

Background/Charter

- OSD recognized a shortfall in current GIG architecture
  - Need to expand GIG Tactical Edge Network (TEN) services
- Requested a cross service working group
  - Navy requested to lead in execution of vision
  - Joint group will have adjunct duty with OPNAV N71 providing initial planning and act as the lead
  - Team with other services, have technical agreements on capabilities and standards
- OPNAV N71 established a TEN lead (SPAWAR 053) and supporting systems engineering working group
  - GIG TEN Engineering White Paper v1.0 (23Sep2005)
    - Spiral development
      - Focus on tactical edge first, then build out
  - TEN NCID Coordination Paper v1.0 (28Sep2005)
    - Coordinate emerging TEN technologies with that of the NCIDs
    - Joint standards

GIG Tactical Edge Network (TEN)



-OSD Recognized Shortfall in Current GIG Arch
-Requested Cross-Service WG To Define Approach
-Navy Requested to Lead Team (N71/ASN RDA CHENG)
    -Directed SPAWAR053 to Lead Joint WG
-GIG Ten Team Will Have Adjunct Duty

-NCID Will Ensure Joint Solution
-Build Upon Several Existing Programs
-System-of-Systems Approach via Fn CHENG and EXCOM
-Precision Engagement in Mass (LINCOLN CSG)
-Initial Focus Littoral JCAS/ASuW

Benefits

- Expanding the GIG Tactical Edge Network (TEN) services efforts would improve the Joint connectivity in the battlefield
- Expected operational impacts of Joint TEN
  - Shorten the kill chain
  - Improve the Common Operational and Tactical Picture (COTP)
  - Improve platform survivability
  - Enhance decision making speed and quality

Proposed Network Types

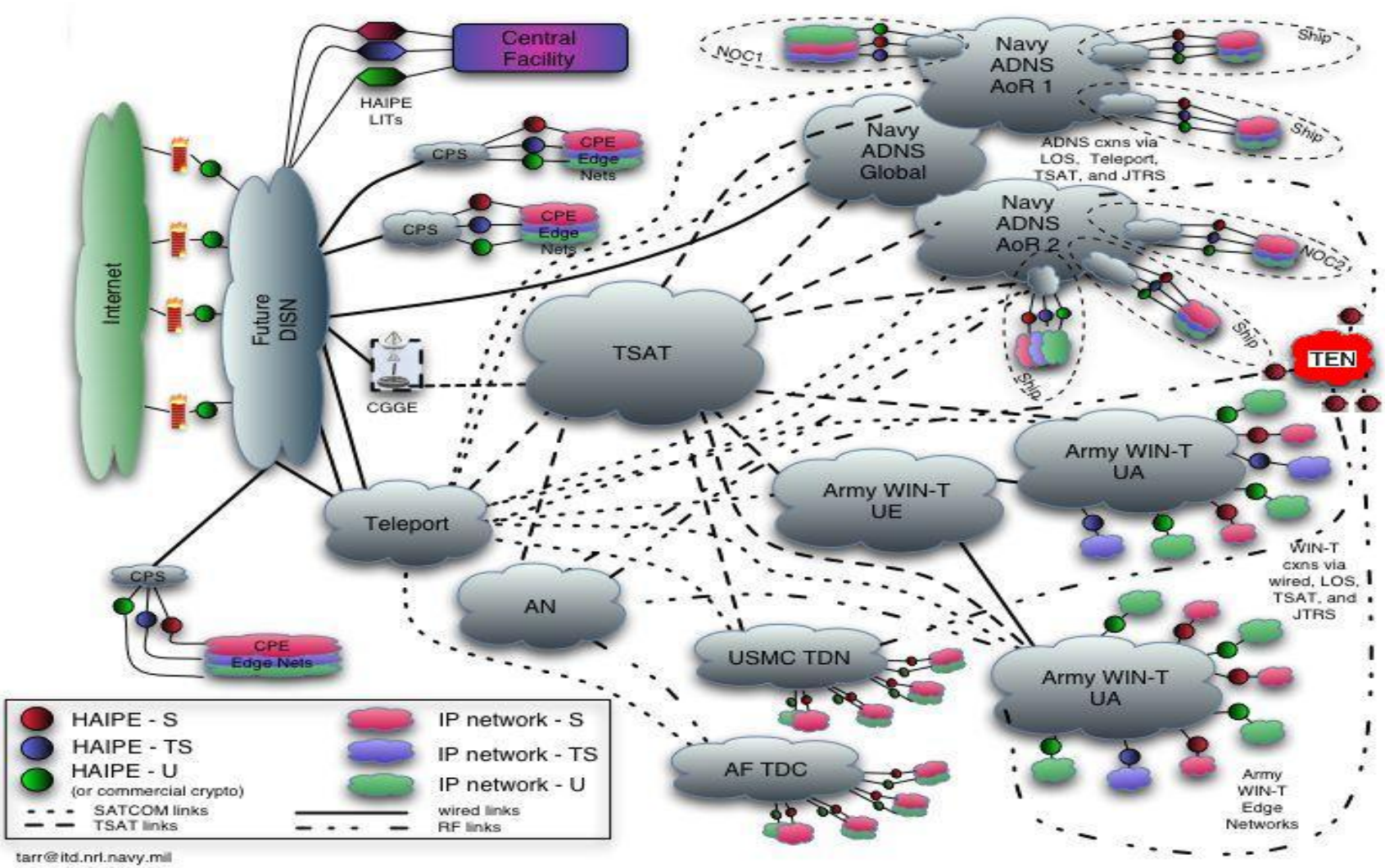
- TEN-A
  - Very stable, low (tens of Kbps), medium (hundreds of Kpbs) and high data rate (up to hundreds of Mbps) RF links based on very long duration (weeks, months) communications relays, including tactical intra-theater SATCOM
- TEN-B (backbone)
  - Stable, medium and high data rate RF links based on medium duration (hours, days) communications relays, including LOS relays involving manned and unmanned aerial platforms
- TEN-M (MANET)
  - Rapidly changing low, medium, and high data rate RF links based on direct platform-to-platform communications, where both the physical proximity and composition of platforms in the network varies over time scales of minutes.

Tactical Edge Network Spirals

FORCEnet engineering conference

1. Spiral TEN-M
2. Spiral TEN-B
3. Spiral TEN-M to TEN-B (Gateway)
4. Spiral TEN-A
5. Spiral TEN-B to TEN-A (Gateway)
6. Spiral TEN-A to TEN-M (Gateway)
7. TEN-B to GIG
8. TEN-M to GIG

Future GIG Transport Domains including TEN

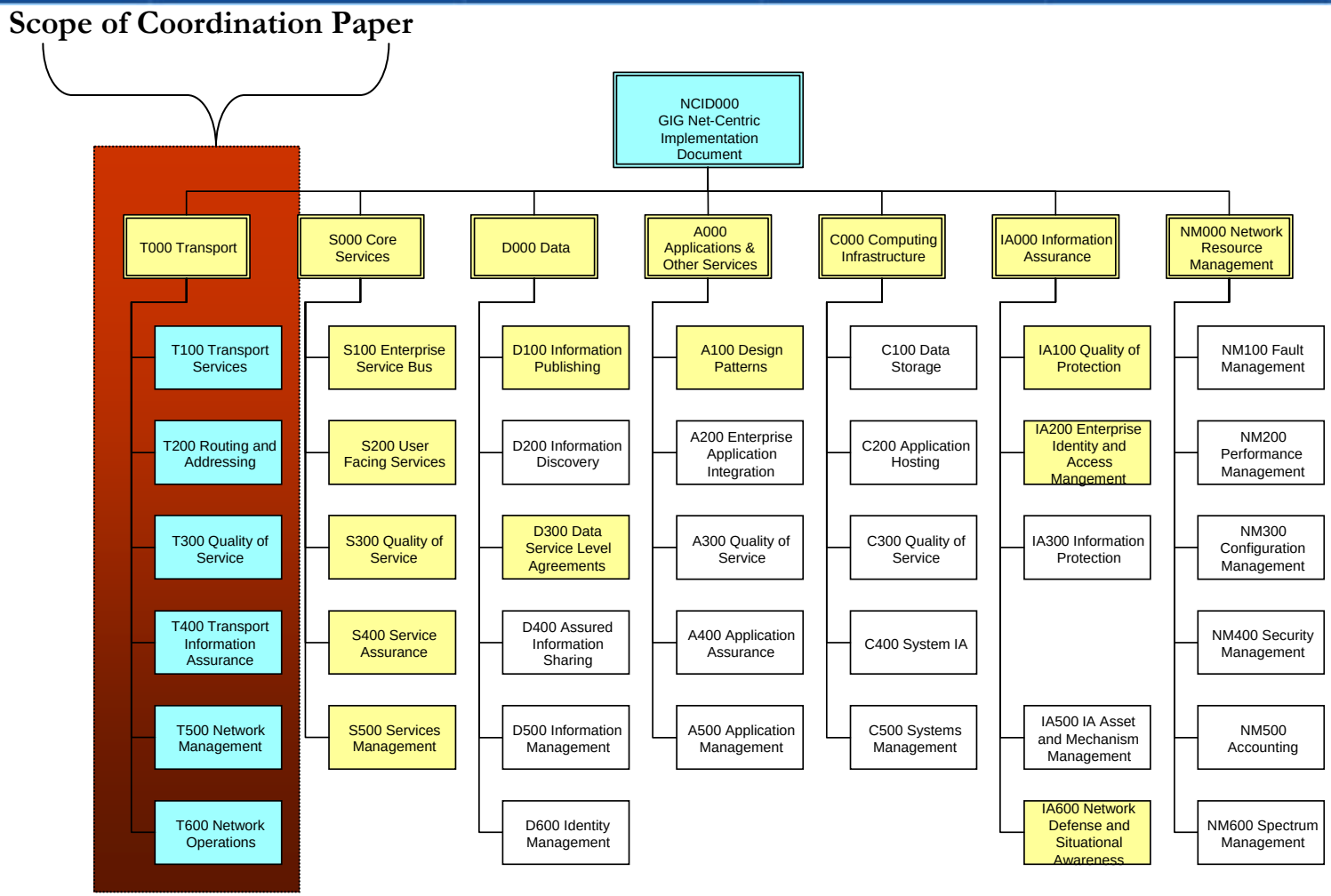


tarr@itd.nrl.navy.mil

Net Centric Implementation Document (NCID) Input

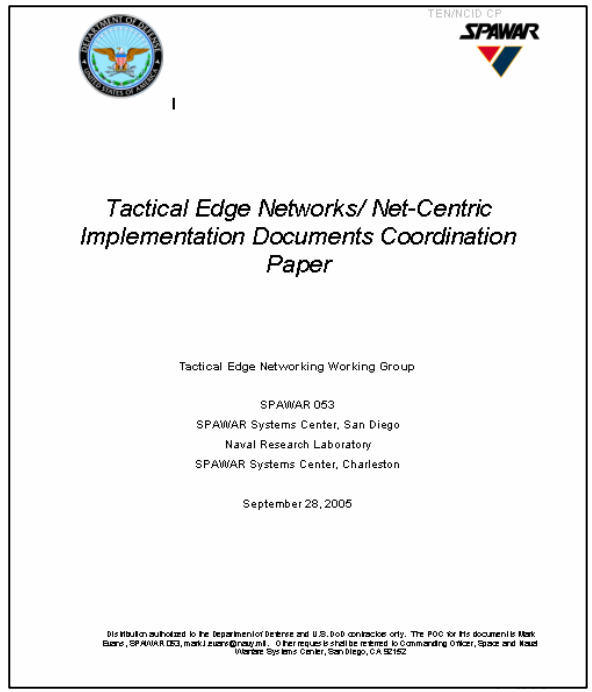
- Purpose of the GIG NCID series is to provide guidance on the overall system-level interactions across the GIG as well as the functions necessary in each segment to achieve the desired E2E behavior
- Tactical Edge Network (TEN) input to:
  - Segments
    - T000-Transport
    - T200-Routing
    - T300-QoS
    - T400-IA
    - T500-Network Management
    - T600-Network Operations Management

Scope of TEN/NCID



Coordination Paper

- Available on https://ges.dod.mil
(CAC enabled/register/GIG Tactical Edge folder)
  - Introduction
  - TEN issues relevant to NCIDs
    - Proposed T000 definition of GIG TEN
    - Simplified view of GIG's tiers and TEN in the 2012 time frame
    - Proposed addition to T000 sections 2.2.5/6
    - TEN technical guidelines for other NCIDS
      - Routing-T200
      - QoS-T300
      - IA-T400
    - Future TEN technical directions for other NCIDs
      - Routing-T200
      - IA-T400
  - Summary


TEN/NCID CP

Tactical Edge Networks/ Net-Centric Implementation Documents Coordination Paper

Tactical Edge Networking Working Group

SPAWAR 053
SPAWAR Systems Center, San Diego
Naval Research Laboratory
SPAWAR Systems Center, Charleston

September 28, 2005

Distribution authorized to the Department of Defense and U.S. DoD contractors only. The POC for this document is Mark Evans, SPAWAR 053, mark.j.evans@navy.mil. Other requests shall be referred to Commanding Officer, Space and Naval Warfare Systems Center, San Diego, CA 92152

Summary

- Current GIG E2E SE processes include NCID development
- Tactical Edge Network Working Group (TEN WG) documented findings in GIG TEN Engineering White Paper (EWP)
- Technical guidelines extracted from EWP are within scope of NCIDs
  - Relevant to current and future versions of T000, T200, T300 and T400